AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An on-line grinding method for a work roll, adapted to press a rotating grinding wheel having elasticity against a work roll of a rolling mill to grind the work roll, characterized in that when a pressing load of the rotating grinding wheel reaches a set load F, which has been set beforehand at a value which is lower than a set grinding pressing load F_0, after the rotating grinding wheel contacts the work roll,

a forward velocity of the rotating grinding wheel is reduced to decrease an overshoot by which the pressing load of the rotating grinding wheel on the work roll exceeds ~~a~~ the set grinding pressing load F_0.

2. (Original) The on-line grinding method for a work roll according to claim 1, characterized in that the load F which has been set beforehand has a value in a range satisfying the following equation (A):

$F \leq F_0 - K \times V1 \times \Delta t$ ... (A)

where

F: set load [N],

F_0: set grinding pressing load [N],

K: grinding wheel spring rigidity [N/mm],

V1: forward velocity [mm/s] of grinding wheel before velocity reduction, and

Δt: control delay time [s].

3. (Previously Presented) The on-line grinding method for a work roll according to claim 1, characterized in that a forward velocity V2 of the rotating grinding wheel after velocity reduction satisfies the following equation (B):

$0.6\times(S\times F_0/(K\times\Delta t))\leq V2\leq S\times F_0/(K\times\Delta t)$ ... (B)

where

V2: forward velocity [mm/s] of rotating grinding wheel after velocity reduction,

S: ratio of allowable overshoot amount to set grinding pressing load F_0,

K: grinding wheel spring rigidity [N/mm], and

Δt: control delay time [s].

4. (Previously Presented) The on-line grinding method for a work roll according to claim 2, characterized in that a forward velocity V2 of the rotating grinding wheel after velocity reduction satisfies the following equation (B):

$0.6\times(S\times F_0/(K\times\Delta t))\leq V2\leq S\times F_0/(K\times\Delta t)$ ... (B)

where

V2: forward velocity [mm/s] of rotating grinding wheel after velocity reduction,

S: ratio of allowable overshoot amount to set grinding pressing load F_0,

K: grinding wheel spring rigidity [N/mm], and

Δt: control delay time [s].